WILDLIFE MANAGEMENT AND RESEARCH NOTES

No.		DATE
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	TITLE: 2011-12 Late Canada Goose Zone Season Report	

Abstract: *In July 2007, Indiana was granted an experimental late Canada goose season in thirty counties to target giant Canada geese (Branta canadensis maxima). Beginning in 2011, all subzones except Terre Haute were granted operational status. In 2012, while the Terre Haute subzone was not allowed to go operational, the U.S. Fish and Wildlife Service no longer required data to be collected there. Therefore, beginning with the February 2012 season, no permit was required to participate and no data were collected. To participate in the Late Canada Goose Zone Season, hunters must have a valid Indiana hunting license, Indiana and federal waterfowl stamps, and a HIP number.*

Introduction

In July 2007, Indiana was granted an experimental late Canada goose season in thirty counties. The experiment period included the 2007-08 through 2009-10 waterfowl seasons. This season is intended to target giant Canada geese (*Branta canadensis maxima*) in and around urban areas. At the end of the experiment period, if Indiana was able to show the US Fish and Wildlife Service (USFWS) that at least 80% of the harvest was made up of giant Canada geese, then Indiana could request that the season be granted operational status, which no longer requires evaluation (permits, checking birds).

The season runs from 1 – 15 February. Shooting hours are ½ hour before sunrise to sunset with a bag limit of 5 per day. The counties included are Elkhart, LaPorte, Marshall, St. Joseph, Starke (South Bend), Adams, Allen, Dekalb, Huntington, Kosciusko, Lagrange, Noble, Steuben, Wells, Whitley (Ft. Wayne), Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Shelby (Indianapolis), Clay, Greene, Parke, Sullivan, Vermillion, and Vigo (Terre Haute).

Methods

To participate in the Late Canada Goose Zone Season, hunters must have a valid Indiana hunting license, Indiana and federal waterfowl stamps, and a HIP number. Before 2012, a free permit was also needed. This permit could be obtained online, at state Fish and Wildlife Areas (FWAs) and Reservoir offices, or by mail by phoning the Department of Natural Resources' customer service center. Each hunter was required to return a brief survey that is distributed with each permit. This permit is no longer required because, since evaluation of the experimental season is over, we no longer track participation and harvest.

Prior to 2011, all birds harvested had to be checked in. In 2012, only hunters in the Terre Haute subzone were required to check in geese. Birds had to be checked in within 48 hours of kill or by 1500 on 15 February, whichever was sooner. Check stations were located on state properties (Goose Pond Fish and Wildlife Area (FWA), Minnehaha FWA, Turkey Run State Park) and one business (Gander Mountain, in Terre Haute). Check station staff aged each bird. Each adult was then sexed and its head was collected. A tag, with date and county of kill, sex of the bird, and band number if

present, was affixed to each head. Heads were then frozen and transported to the Bloomington field office, where skull (Moser and Rolley 1990, Figure 1) and culmen (culmen 1 of Dzubin and Cooch 1992) lengths were measured by the waterfowl biologist using 150mm digital calipers.

Skull measurements of adults were used in the algebraic proportioning formula of Trost et al. (1992) to determine the proportion of harvest (at the county, region, and state level) that is made up of giant Canada geese. Each sex was analyzed separately, then averaged to determine the overall proportion. Specifically, mean skull lengths of 132.8mm for adult males and 124.8mm for females were derived from birds measured in Illinois, Indiana, Michigan, Ohio, and Ontario, given in Table 2 of Moser and Rolley (1990). We used these jurisdictions because band returns show that most of the Canada geese harvested in Indiana originate in these areas. We also averaged the Mississippi Valley Population (MVP) and Tennessee Valley Population (TVP) means for adult *B. c. interior* (121.1mm for males and 113.8mm for females, also derived from Table 2 of Moser and Rolley 1990) because *interior* harvest in Indiana is made up of both MVP and Southern James Bay Population (SJBP, formerly TVP) geese. Note that the averages for *interior* geese make this method slightly conservative, as band returns show that far more MVP geese are shot in Indiana than SJBP, but both are given an equal weight. Since SJBP geese are smaller (Moser and Rolley 1990), this lowers the proportion as derived from Trost et al. (1992).

Due to bias issues with using only one sex (see Discussion for more), the Trost et al. proportions were determined for both sexes, then averaged to obtain a final estimate. This averaging was accomplished by

$$\frac{(\#\text{ males} \times \%\text{ giant}) + (\#\text{ females} \times \%\text{ giant})}{(\#\text{ males} + \#\text{ females})}$$

When the method of Trost et al. (1992) produced estimates of greater than 100% giants (see Discussion for more), the "% giant" in the averaging equation was set to "100%" instead of the value generated.

Morphometric data were analyzed for all 30 counties 2008-2010, and for the counties in the Terre Haute subzone only in 2011.

Results

Permits were issued to 15,889 hunters during the four seasons that permits were issued (2008-2011). Based on data provided in these surveys, an estimated 10,562 hunters participated in the 2008-2011 late goose seasons in Indiana. These are not unique hunters, as many of them likely hunted in multiple years, and this does not include a correction for non-respondents that did not hunt: This number may be biased high if a large proportion of non-respondents did not hunt.

A total of 2,429 adult male heads and 2,345 adult female heads were measured across all four years. These numbers are slightly lower than the total of each sex checked because some heads were too damaged to measure, and some tags came off of heads or were illegible.

Across the first three years of the season (2008-2010), mean skull length of harvested adult males (statewide) was 130.3mm (95% CI = 130.0 – 130.5mm), and the mean skull length of harvested adult females was 125.7mm (95% CI = 125.4 – 125.9mm). The estimated percent of giant Canada geese in the harvest, across all three seasons and all four regions, was 89.1%. Because of the averaging process, no confidence interval could be developed. However, the 95% confidence interval for males was ± 2.1%, and for females, ± 2.3%. Statewide harvest across all three seasons is

estimated to be 14,082 giant Canada geese and 1,724 *interior* Canada geese (for a total harvest of 15,806).

For the Terre Haute subzone in 2011, mean skull length of harvested adult males was 129.9mm (95% CI = 128.8 – 130.9mm), and the mean skull length of harvested adult females was 124.6mm (95% CI = 123.3 – 125.9mm). The estimated percent of giant Canada geese in the 2011 harvest was 86.0%. Across all four seasons (Terre Haute subzone only), mean skull length of harvested adult males was 128.5mm (95% CI = 128.0 – 129.0mm), and the mean skull length of harvested adult females was 124.0mm (95% CI = 123.5 – 124.5mm). The estimated percent of giant Canada geese harvested across all four seasons thus far was 77.8%.

In addition to morphometric analyses, band return data were also analyzed. Five hundred forty one banded Canada geese were reported shot in Indiana during 1 – 15 February 2008-10 (USGS 2010). Of these, 351 were banded in Indiana during the breeding season, 117 were banded as breeders in other Mississippi Flyway states, and 70 were banded in Canada. Of the Canadian-banded birds, all but four were banded in Ontario (three in Nunavut and one in Quebec). The Ontario birds were made up of 38 MVP and 28 giants. These band returns were multiplied by the "geese per band" (Column K in Table 1) of Moser (2010). Using this method, 84.3% of the total February season harvest was giants. Based on band returns, total harvest across all three seasons was 18,248 Canada geese. This represents a difference of only about 5% in the proportion of giants in the harvest, and 15% in the estimate of number of birds harvested.

Discussion and Recommendations

Using banding records, Phelps (2010) found that 75% of checked geese were correctly classified by sex. After accounting for possible errors sexing juvenile birds during banding operations, he determined that at least 17% were actually assigned the wrong sex during the evaluation of the late season. Aging and sexing birds that have been shot, frozen, etc. can be difficult. These misclassifications are likely a source of error in the current evaluation.

In addition to the hunter surveys and band returns, there exists another estimate of total harvest during this period. The U.S. Fish and Wildlife Service (USFWS) estimates harvest using the Harvest Information Program (HIP), in which a sample of hunters receives detailed questionnaires regarding their migratory bird hunting. The HIP survey is designed to produce accurate estimates (±10%) at the state level across an entire hunting season, and the confidence intervals become larger the smaller the area or time period become (K. Richkus, USFWS, pers. comm.). As such, HIP might be expected to be less accurate over a 15 day period than the hunter survey, which was tailored to evaluate this short season. Also, this method cannot be used to determine subspecific affiliation of harvested birds. Total harvest as estimated by HIP (2008-2010, comparable to the estimates provided above) is 18,900. This estimate is about 20% higher than that produced by the hunter survey, but only 4% higher than that produced by band returns. Total harvest across all seasons thus far (2008-2012) is estimated by HIP to be 33,500 geese. Using the estimated proportion of Indiana-breeding geese from Table 5 in Phelps (2010), an estimated 20,600 Indiana-breeding giant Canada geese have been harvested during the five years of this season.

In conclusion, in the vast majority of Mississippi Flyway jurisdictions, the overwhelming bulk of Canada goose harvest is giant Canada geese. Managers involved in every sub-Arctic Canada goose population in the Mississippi Flyway (Eastern Prairie Population, SJBP, and MVP) have recently liberalized seasons. These liberalization plans require annual monitoring to ensure that these populations are not seriously adversely affected by these liberalizations, and the evidence supports this. In USFWS (2010), the USFWS proposed to do away with the requirement for experiments preceding operational status for special Canada goose seasons. We are hopeful that the removal of

this onerous requirement remains in the final version of this document. Individual states should no longer be required to undergo such "experiments" in order to be allowed to manage Canada geese using hunters rather than lethal take and other means during the breeding season.

Acknowledgments: We would like to thank all of the personnel from the Divisions of Fish and Wildlife, State Parks and Reservoirs, and Forestry who learned to sex and age geese, and who worked check stations. I also thank those that provided goose carcasses for training purposes. This work would not have been possible without their assistance.

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